

On a Collection of Thysanoptera from the West Indies, with Descriptions of new Genera and Species. By RICHARD S. BAGNALL, F.L.S.

(PLATES 48 & 49; and 2 Text-figures.)

[Read 19th November, 1914.]

SOME recent small collections of Thysanoptera from the West Indies have proved highly interesting, producing such noteworthy forms as *Corynothrips*, Williams, and *Dinurothrips*, Hood, the former described from St. Vincent and the latter from Porto Rico.

This present paper deals with a collection made by the Government Entomologist, Mr. Urich, in Trinidad, and though the species are few, yet they are of very considerable interest. Out of eleven species but six represent previously known forms, and of these *Frankliniella melanommata* has but recently been described (Dec. 1913) by Williams, whilst the Neotropical forms *Dicaiothrips levicollis*, Bagn., *D. brevicornis*, Bagn., and *Eupathithrips silvestrii* (Buffa) are not well known. All the new forms are striking species, and I have found it necessary to erect three new genera—*Sedulothrips* (to which we must also refer Hood's *Polyommatothrips vigilans*), *Craniothrips*, and *Chirothripoides*. The latter is erected for an anomalous and peculiar form, the type of a new division of the Tubulifera; and, having now studied five species of *Eupathithrips* and the allied genus *Sedulothrips*, I have considered it expedient to form a division for their reception. The compressed and subcarinate dorsum of the head; the large finely-faceted eyes, almost contiguous in front, the subventrally or ventrally seated antennæ, and the long mouth-cone are typical of this group; whilst the form of antennæ and the long sense-cones are also peculiar, the latter originally suggesting the generic name *Eupathithrips*. In describing *Polyommatothrips vigilans* from Panama, Hood* has pointed out that the strongly emarginate fore-margin of the prothorax enables the head to be moved back to an angle of about 45 degrees. The antennæ are inserted on the ventral surface and must be carried in life at almost right angles to the head—hence the necessity of the abnormal moving back of the head. Mr. J. D. Hood has very generously forwarded me his unique ♂ and ♀ types of this interesting insect for examination and comparison with my Trinidad example, which is a very closely allied species. I have thus had an opportunity of studying all the known species of this group, and append a few further remarks upon *Eupathithrips dentipes*, which still rests upon the type-specimen collected by Mr. Champion. I should

* 'Psyche,' xx., August 1913, p. 123.

mention that the Bromeliaceous species, *Eupathithrips affinis*, was collected by Mr. Hugh Scott, to whom I am indebted for the single specimen, and I trust that renewed search in its apparently specialised habitat will result in the discovery of more examples.

In raising the *Eupathithrips* group and *Chirothripoides* each to family rank, I do so reluctantly and provisionally; that they are sharply separated from the heterogeneous *Phlæothripidæ* (s.l.) is evident, but it will only be after the examination of a great deal more material and a close analysis of our known forms that we can hope to put the Tubilifera upon a sound working basis. Meantime, by recognizing and setting aside these well-defined groups, we, by elimination, make work upon the residue a little more easy.

As a mark of gratitude and esteem, I have pleasure in naming *Craniothrips urichi* in Mr. Urich's honour.

Suborder TEREBRANTIA.

Family ÆOLOTHRIPIDÆ.

Subfamily ÆOLOTHRIPINÆ.

Genus MITOTHRIPS, *Trybom*, 1912.

Near *Æolothrips* and allies, and readily distinguished by the extraordinarily long and slender antennæ caused by the elongation of joints 3 and 4, which are apparently without sensoria or sense-areas of any kind. Fore-wings without cross-veins, broadened distally.

Eyes larger, ocelli normal. Antennæ at least 6 times as long as the head, joints 2-4 light; 4 longer than 3, and 5-9 together only 0·2 the length of 3 and 4 together *Mitothrips megalops*, Trybom.
 Eyes smaller, front ocellus smaller than others. Antennæ about 3·5 times as long as head, joints 1-4 light; 4 shorter than 3, and 5-9 together more than one-half (0·57) the length of 3 and 4 together *Mitothrips petulans*, sp. n.

MITOTHRIPS PETULANS, sp. n. (Pl. 48. figs. 1-5; Pl. 49. figs. 1 & 2.)

♀. Length a little more than 2·0 mm., breadth of pterothorax 0·31 mm.

General colour dark brown, mesothorax lighter, and abdominal segments 1 to 3 white or yellowish-white, excepting where joined to each other, and there tinged with reddish-brown; segment 10 light yellow. Antennal joints 1-4 light lemon-yellow, tip of 4 lightly tinged with brown, 5-7 dark brown, and 8 and 9 lighter greyish-brown. All femora lighter or darker brown, inclined to a yellowish light patch near apices within; fore-tibiæ yellowish to greyish-brown, margins dark brown, hind and intermediate tibiæ uniformly dark brown; all tarsi whitish. Fore-wings rich brown, a clear ill-defined patch occupying third fifth, or thereabouts, and a similar

but shorter white area just before the distal twelfth ; hind wings clear, with a faint trace of grey corresponding with the dark areas of the fore-wing.

Head and thorax difficult to describe from the single preparation owing to the extreme difficulty in obtaining an exact dorsal view. Head more or less subglobular in form, cheeks roundly constricted to base, with a few small setæ. Eyes irregularly and somewhat coarsely faceted, some of the facets beneath being extraordinarily large ; facets not touching ; minutely pilose ; upper portion occupying about 0.5 the length of head. Posterior ocelli somewhat large, placed above a line drawn across the posterior fourth of eyes ; anterior one much smaller, protected by two long bristles placed rather closely together on a line across the front of posterior pair. A pair of short dorsal setæ on a line behind eyes, approximately behind the posterior ocelli. Antennæ very long and slender, about 3.5 times as long as the head, pilose ; basal joints subapproximate ; 2 cylindrical, twice as long as broad ; 3 with short stem, about 15 times as long as broad ; 4 also long and slender, a shade broader than 3 and about 9 times as long as broad ; 5 to 7 slightly broader ; 8 rapidly narrowing from about middle, distally and broadly united to 9, which is almost styliform. Relative lengths of joints—12:17:80:55:25:18:16:14:5.5. Palpi 3/2-jointed. Head ventrally arcuate below insertion of antennæ and furnished with numerous hairs, the inmost pair the longest.

Prothorax apparently not broader than the head and converging basally, about as long as the head and 0.8 as long as broad across fore-angles ; no prominent bristles and surface irregularly, sparsely, and minutely setose. Pterothorax long and narrow, 1.25 times as long as wide, broadest across base of mesothorax, where it is twice as broad as at juncture with prothorax ; sides roundly widened, and sides of metathorax narrowed to base, 0.65 as wide across posterior coxæ as across mesothorax. Legs long, setose, the setæ arranged in more or less regular rows, femora thickening distally ; structure of fore-tarsus typically *Æolothripid*. Wings reaching to about the 7th abdominal segment ; fore-wing broadened distally, rounded at tip, longitudinal veins indistinct but clearly defined by setæ ; cross-veins absent. Costal bristles slender, 35, ending at extreme apex ; whole length of upper vein with 22 and hind vein with 16 short setæ—more widely spaced on central clear patch, none on distal clear patch, and 2+2 on distal dark area. Cilia on fore-margin of hind-wing sparse, only a little longer than the breadth of the wing ; those forming lower fringes of both fore- and hind-wings long.

Abdomen subpetiolate, very narrow at juncture with thorax, broadening evenly to 6th segment, where it is 1.5 times as broad as the pterothorax and more than 2.5 times as broad as the posterior margin of 1. 9 abruptly narrowed to base of 8, and 8 and 9 roughly obconical ; 9 with one long lateral bristle near middle and two pairs of similar bristles on posterior

margin of tergite, which are longer than segments 9 and 10 together and dark brown in colour. Tergite 10 with four long colourless bristles, about 0.75 the length of those on 9; two shorter ones at extreme tip (vestigial segment 11).

Type. In Hope Collections, University Museum, Oxford.

Habitat. TRINIDAD, Sangre Grande, July 1913. Associated with *Heliethrips rubrocinctus* on cacao-leaves.

In many respects, especially in the form of body, this species reminds one of *Franklinothrips vespiformis*, Crawf., from which it may be distinguished by the form of antennæ and head, coloration of abdomen, the first three and 10th segments of which are light in this species.

Family THIRIPIDÆ.

Genus HELIOTHRIPS, Hal.

HELIOTHRIPS HÆMORRHOIDALIS (*Bouche*) and var. ABDOMINALIS, *Reut.*

44 ♀'s and larvæ on Liberian Coffee; Esparanza Estate, California, Trinidad, Oct. 1912; on under sides of leaves, also on upper side when well shaded (99.4).

4 ♀'s f. *typica* only and larvæ on coconut-leaves, Cocal, East Coast, Trinidad, July 1913 (99.6).

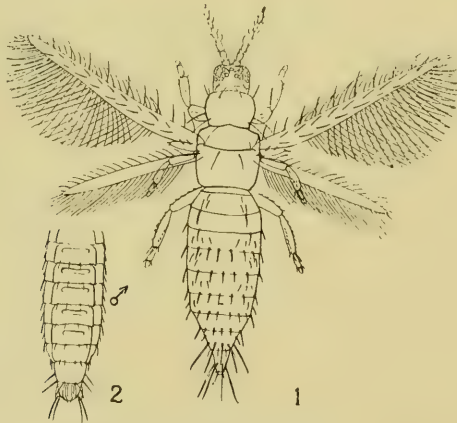


Fig. 1.—*Frankliniella insularis* (Franklin). $\times 20$.
2.—The same; underside of abdomen in ♂. $\times c. 20$.

Genus FRANKLINIELLA, Karny.

FRANKLINIELLA INSULARIS (*Franklin*), cf. *Proc. U.S. Nat. Mus.* xxxiii. (1908) 715.

Both sexes of this species, described by Franklin from Barbados, are well represented in two tubes, one from flowers of *Erythrina* (7 ♀'s, 1 ♂, and

larvæ), Sangre Grande, Feb. 1913 (99·7), and the other from cultivated roses, sucking petals, La Tosca, Sangre Grande, April (99·5) and November 1913. In the latter case the species appeared in numbers and was accompanied by *Frankliniella melanommata*, Williams.

It is also known from Guadalajara and Monterey, Mexico; Brownsville, Texas; and Miraflores, Canal Zone, Panama*.

FRANKLINIELLA MELANOMMATA, *Williams, Journ. Econ. Biol.* vol. viii., December 1913, pp. 213–215, fig. 2.

This little species has only recently been described by Williams from St. Vincent. It is somewhat closely allied to *tritici* (Fitch) and *cephalicus*, Crawford, and it causes one to think that the *tritici* recorded by Franklin from Barbados may be referable to this form.

Both sexes from cultivated roses, La Tosca, Sangre Grande, April and November 1913.

Suborder TUBULIFERA.

Family IDOLOTHRIPIDÆ.

DICAIOTHRIPS LÆVICOLLIS, *Bagn.*

Two ♀s with *D. brevicornis* recorded below, and 3 ♂s and 1 ♀ from Verdant Vale, Trinidad, April 1912. These agree perfectly with description of the original examples from Venezuela, except in the length of the bristles of the 9th abdominal segment in the ♂, which in these examples are seven-eighths the length of tube. It should be noted that these are shown much too short in the original figure (pl. 52, fig. 5 †). The relative lengths of the antennal joints are approximately:—20 : 26 : 102 : 63 : 57 : 45 : 28 : 25. Tube in ♂ about 4 times as long as broad at base.

DICAIOTHRIPS BREVICORNIS, *Bagn.* (Pl. 48, fig. 9.)

Examples of both sexes found amongst leaves of a dead coconut-palm and some on and under the bark of the stem. Mr. Urich states that examples were observed to deposit eggs on the leaves and to sit over them. The fore-femur within has a low tubercle at distal third, somewhat as in *Idolothrips tuberculatus*, Hood, though not so pronounced.

♂. The male was previously unknown. The head is a little longer than in the ♀, nearly 2·5 times as long as broad, postocular bristles absent, and genal spines a little more plentiful. Fore-femora not strongly incrassate; spines on outer side near base stronger than in the ♀; tibiæ and tarsus as in ♂ *distinctus*, Bagn. Relative lengths of antennal segments approximately:—18 : 25 : 66 : 51 : 45 : 35 : 24 : 22.

* See Hood, 'Psyche,' xx. No. 4, August 1913.

† Journ. Linn. Soc., Zool. xxx. 1909, pp. 369–387, pls. 51–53.

Abdominal segments 7 and 8 practically subequal. Tube stout, 0·7 as long as head, twice as long as 9th segment, and but slightly longer than either 7 and 8; about 3 times as long as broad at base and twice as broad at base as at apex. Terminal hairs about as long as tube, those on 9 a little longer.

This species fits well into Section II.ii.B of my table on Neotropical *Dicaiothrips*, wherein these two species were described, but is readily separated from both *levicollis* and *foveicollis* by the short third antennal joint and stout tube.

Family EUPATHITHRIPIDÆ, mihi.

Head at least twice as long as wide; dorsum compressed and subcarinate, Eyes finely and closely faceted, prominent, contiguous, or nearly touching anteriorly, almost completely surrounding ocelli; ventrally well separated. Cheeks with or without prominent spiniferous tubercles. Mouth-cone long and pointed, reaching to beyond the base of the prosternum. Antennæ set below vertex, on ventral surface; intermediate joints long and slender, segments 3 to 5 (or 6) clavate, distally abruptly narrowed; sense-cones very long and slender.

Cheeks with prominent spiniferous tubercles. Antennæ set higher on the ventral surface, sense-cones longer, third joint shorter than or at most but little longer than 4. Fore-femur in both sexes with a tooth near apex within.

Genus EUPATHITHRIPS, Bagn.

Cheeks without tubercles. Antennæ set lower on the ventral surface; sense-cones shorter; third joint much longer than 4; anterior margin of prothorax strongly emarginate. Fore-femur simple. . . . Genus SEDULOTHRIPS, nov.

Genus EUPATHITHRIPS, *Bagnall*.

1908. *Eupathithrips*, Bagnall, Trans. N. H. Soc. Northumberland, Durham, and Newcastle-upon-Tyne, n. s., iii. p. 23.

1908. *Heterothrips*, Buffa (not Hood), "Redia," iv. 1908, p. 124.

1909. *Polyommatothrips*, Buffa, *op. c. v.* 1909, p. 164.

[EUPATHITHRIPS DENTIPES, *Bagn.* 1908. (Pl. 48. fig. 10; Pl. 49. fig. 5.)

This species is easily separated from *silvestrii* and *affinis* by its larger head, the larger fore-legs, the distinctive shape of fore-femora (as in *Rhæbothrips*, Karny) which are without the minute spiniferous tubercles on the inner margin, and the strong double series of teeth-like protuberances along the inside margin of tibia. The abdomen is broader, and the segments 4-7 at least have a white patch at each anterior angle.

The prothorax is not so triangular in shape as shown in my original figure, but I find it difficult to describe from the single dried specimen.]

EUPATHITHRIPS AFFINIS, sp. n. (Pl. 48. fig. 11 ; Pl. 49. figs. 6 & 8.)

♂. Length about 4.5 mm.

Colour as in *E. silvestrii*, but with the apical *two-thirds* of intermediate tibiae and apical *half* of hind tibiae yellow. Abdominal segments 3 to 6 each with a pair of antero-lateral white patches.

Relative lengths of antennal joints 3-8 as follows :—163 : 168 : 174 : 110 : 73 : 36. Sense-cones protected by long pointed setae as in *E. dentipes*.

This species differs from *E. silvestrii* in its smaller size, the relative lengths of antennal joints 3 and 4 (which in this species are practically subequal), and in the coloration of the intermediate and hind tibiae. The genal spine just behind eyes is more minute than in *silvestrii*, whilst the genal spiniferous tubercles and those along the inner margin of each fore-femur are noticeably larger than in the ♂ of that species. The two series of tubercles along inner margins of fore-tibiae, so strong in *dentipes*, and in *silvestrii* vestigial, are in *affinis* distinctly denoted.

Though a smaller species, the prothoracic setae (at least the mid-lateral and anterior pairs) are distinctly longer than in *silvestrii*, the shortest being at least 0.4 the length of the prothorax.

The bristles of the 9th abdominal segment are longer than in *silvestrii*, the outer being about as long as the tube and the inner distinctly longer, whilst the lateral abdominal bristles are comparatively longer also.

Type. In Hope Collections, University Museum, Oxford.

Habitat. TRINIDAD, 1 ♂, taken by Mr. Hugh Scott from between the leaf-bases of an epiphytic Bromeliaceous plant, from the virgin forest of Trinidad's highest mountain, Tucuché, 3100 feet, March 20th, 1912.

EUPATHITHRIPS SILVESTRII (*Buffa*). (Pl. 48. fig. 12 ; Pl. 49. figs. 7 & 9.)

Heterothrips silvestrii, Buffa, 'Redia,' iv. 1908, pp. 124-125, fig. 2.

Polyommatothrips silvestrii, Buffa, *op. c. v.* 1909, p. 164.

♀. Length 5.0 to 5.5 mm., breadth of mesothorax about 0.7 mm.

Colour dark chestnut-brown ; fore-tibiae yellowish shaded lightly with brown near base, intermediate and hind tibiae with the distal half and fifth respectively yellow ; all tarsi yellow. Antennal joint 3 yellow, lightly touched with brown near apex ; stems of 4 and 5 and basal third of 6 similarly yellow.

Head 2.2 times as long as broad, and 2.5 times as long as prothorax through middle ; cheeks with a few prominent spiniferous tubercles and a short stout spine near eyes. Eyes practically touching anteriorly, very finely faceted, occupying about one-third the length of head. Ocelli rather large, and almost completely surrounded by the eyes ; anterior ocellus forwardly directed. Postocular bristles short and blunt, placed far back, about one-

third the length of the eye. Antennæ nearly twice as long as the head, set ventrally below the anterior part of the eyes, and between the ventral parts; relative length of joints:—54:50:134:165:165:96:64:32; 3-6 produced distally into a shorter or longer stem beyond the broadest part, the produced part being longer and more slender in 5 and 6; 7 and 8 broadly and obliquely united, together fusiform. Sense-cones exceptionally long and slender, protected immediately behind by short, slender, knobbed setæ, instead of long bristles as in the known allied forms. Mouth-cone long and sharp, reaching beyond pronotum.

Prothorax 2.25 times as long as broad across hind angles, anterior margin rather strongly emarginate; setæ rather short, parallel-sided and faintly expanded at tips; the longest (at posterior angles) from 0.35 to 0.4, and the others about 0.32 the length of prothorax.

Pterothorax as broad as long, surface, especially the metanotum medially, more or less plainly reticulated. Wings reaching to about the 6th abdominal segment, tinged with smoky yellow, darker near base, and median thickenings and cilia brown. Median vein in fore- and hind-wings reaching to the distal fourth; cilia on both margins long and closely set, at least 32 duplicated at posterior margin of fore-wing near apex.

Fore-femur very slightly incrassate, with tooth near apex within and a few minute spiniferous tubercles on inner margin; fore-tibiæ with a double row of short bristles their basal tubercles being vestigial; fore-tarsus with a minute tooth in both sexes.

Abdomen long and slender, slightly narrower than pterothorax at base, and narrowed evenly to base of tube, all segments, excepting 9, distinctly transverse. Tube 0.5 the length of tube, about 0.4 as broad at base as long and 0.45 as broad at apex as at base; terminal hairs slender, about 0.7 the length of tube. Bristles on 9th segment about as long as tube, the outermost pair slightly shorter and more slender; 7 and 8 with two pairs of blunt dorso-lateral bristles, the outer being the longer, colourless; 2-6 with similar but shorter bristles, which are dark brown at base and colourless distally. In addition, there is a shorter sharp spine at extreme posterior angles of 3-8. Wing-retaining spines on 2-6, and one vestigial pair at hind margin of 7.

♂. A little smaller and more slender; genal spines not so noticeable. Ninth tergite with a pair of spines placed above the posterior margin and between the inner and outer bristles; outer pair of bristles slender, about 0.7 the length of tube, inner ones about as long as the tube.

There can be little doubt that this is the species described by Buffa, the short third antennal joint and the minute protecting hairs of the sense-cones being distinctive features shown in Buffa's figure.

Habitat. TRINIDAD, on and in cracks of a dead cacao-tree (*Urlich*).

Genus SEDULOTHrips, nov.

Cheeks without tubercles. Antennæ set low on the ventral surface of head, between the eyes; joint 3 longer than 4; sense-cones moderately long, shorter than in *Eupathithrips*. Anterior margin of prothorax strongly emarginate. Fore-femur without tooth near apex within.

Otherwise as in *Eupathithrips*.

SEDULOTHrips INSOLENS, sp. n. (Pl. 48. figs. 13-15; Pl. 49. fig. 10.)

♀. This species so closely approaches *S. vigilans*, Hood *, that a detailed description is unnecessary. The fore-tibiæ are unicolorous with the femora; the antennæ are of a darker shade, yellowish-brown, and the stems of joints 4 to 6 are not so markedly yellowish as in *vigilans*, these joints being practically unicolorous; and the 6th joint is more fusiform and longer than the apical and penultimate joints together. The prothorax is broader, at least 2.5 times as broad as its median length; all bristles present, blunt, and longer than in *vigilans*, those at posterior angles at least 0.5 the median length of the prothorax, and those at anterior angles and the mid-lateral pairs not shortened as in *vigilans*.

The fore-wings are of a uniform brown with slight yellowish tinge and, if anything, richer in colour basally; median thickening (which almost attains apex in hind-wing) darker brown. Fore-wings darker in colour than in *vigilans*, not strikingly lighter distally, and without the clear patch near base; surface distally curiously sculptured, giving the appearance of being set with scales; 27 cilia duplicated.

Abdominal segment 8 longer than the tube (in ♀ *vigilans* not so long). Distal half of tube not noticeably lighter; hairs on segment 9 2.6 (in ♀ *vigilans* 2.0) times the length of tube, and outer terminal hairs just twice the length, the innermost pair shorter.

Through Mr. Hood's kindness, I have had the satisfaction of examining the ♂ and ♀ types of his *Polyommatothrips vigilans*. I was at first tempted to regard my solitary example as referable to *vigilans*, but it differs in so many little points (of which the chaetotaxy of the prothorax and the 9th abdominal segment and tube, the coloration, and curious sculpturing of the fore-wings seem to be the most important) that it seems necessary to regard it as belonging to a second species.

I hope that further examples will be met with, so as to make a closer examination of these points possible, and more especially of the curious surface-structure of the fore-wings.

Type. In the Hope Collections, University Museum, Oxford.

Habitat. TRINIDAD. One ♀ with *Eupathithrips silvestrii*, Buffa, from on and in cracks of a dead cacao-tree.

* 'Psyche,' xx., August 1913, p. 123.

Family PHLEOTHRIPIDÆ (s. l.).

Genus CRANIOTHRIPS, nov.

Size small. Head twice as long as broad, arched dorsally. Mouth-cone not reaching across prosternum, blunt, rounded at tip; maxillary palpi long and stout. Prothoracic setæ stout, blunt; the single long bristle on each fore-coxa pointed. Fore-wings slightly constricted at about middle.

Belongs to the *Haplothrips-Hindsiana* group, but distinguished at once by the shape of the head, which reminds one in a modest way of the arched head of that curious genus *Docessissophothrips*, Bagn.

Type. *C. urichi*, mihi.

CRANIOTHRIPS URICHI, sp. n.

Length 1·8–1·9 mm.

General colour lemon-yellow to a richer yellow; antennal joints 5–8 grey-brown, and distal half of 4 lightly tinged with grey; lower median margin of mesonotum and corresponding upper portion of metanotum and the whole of the tube grey-brown. Wings clear, with a grey-brown patch at base; fore-wing with the second third (*i. e.* middle portion) grey-brown, and hind-wing with corresponding portion slightly tinged with grey; cilia dark. Tip of mouth-cone and a spot at tip of each tarsus brown.

Head twice as long as broad across eyes and 1·5 times as long as the prothorax, dorsal surface arched and sides somewhat constricted near base. Eyes coarsely faceted, occupying approximately 0·25 the length of head, pigmentation deep black. Vertex raised in form of a hump; ocelli large, posterior pair on sides of raised part, almost contiguous with eyes and above a line drawn across their centre; the anterior one facing forwards; pigmentation crimson. Interocular bristles absent. Postocular bristles present, placed well back and about the length of an eye, stout, practically parallel-sided and broadened at tip. Mouth-cone reaching about 0·7 across prosternum, blunt; tip rounded. Maxillary palpi long and stout, basal joint very short; one sensory filament at tip longer than the others and than the palp, an additional filament on the inner margin near apex. Antennæ at least 1·6 times the length of the head, approximate at base and seated below the vertex; relative length of joints:—12:19:21:21:20:29:18:14. Sense-cones normal; last joint with an apical sense-bristle as long as the joint.

Prothorax about 1·25 times as broad across hind-angles as long, diverging from base of head to about middle and thence practically parallel. Bristles at anterior and posterior angles and postero-marginal and mid-lateral pairs present, each of the latter pair being set just behind and close to the ones at anterior angles; those at posterior margin about 0·5 as long as the

prothorax, all stout and broadened at apex. Fore-coxæ projecting, with one long, slender, and *pointed* bristle; fore-femur 0·8 the length of the head and about twice as long as broad; tibia about as long as femur; tarsus unarmed. Prothorax a little longer than broad and only slightly broader than the breadth across fore-coxæ. Fore-wing very slightly constricted about middle, with three stout setæ, similar to those on the prothorax, at base; cilia on fore- and hind-margins somewhat long and widely spaced.

Abdomen only slightly broader than pterothorax, about 3·5 times as long as broad, practically parallel-sided, thence gently rounded to base of tube. Tube about 0·6 the length of head, 0·4 as broad at base as at apex; sides evenly and gently narrowed. Terminal hairs greyish-brown basally, colourless distally; longer than tube, but very slender and difficult to see. Bristles on 9th segment slender and about as long as the tube. Lateral bristles long, tapering, an inner pair stouter and knobbed.

Type. In the Hope Collections, University Museum, Oxford.

Habitat. TRINIDAD, Capara, August onwards, 1913. On leaves of *Inga* sp.

Family CHIROTHRIPOIDIIDÆ, mihi.

Genus CHIROTHRIPOIDES, nov.

Size small. Form very slender and linear.

Head longer than broad, produced beyond eyes; ocelli on or above a line across the fore-margin of eyes. Mouth-cone short, rounded. Maxillary palpi 2-jointed, apical sensory filaments very long. Antennæ with joints 3 to 5 at least as broad as long.

Prothorax weakly chitinised, longer than head and longer than broad. Fore-coxæ very elongate, all legs short and stout; fore-tarsus armed. Pterothorax elongated; wings long, very slender, and practically parallel-sided from base to apex; long cilia on both margins of fore- and hind-wings.

Abdomen linear; posterior margin of 8th sternite armed with a pair of long lateral spines and a series of four shorter pairs between them, the inmost being longest.

Type. *C. typicus*, mihi.

The form of the antennæ, head, prothorax, wings, and, in particular, the curious armature of the 8th sternite make it difficult to place the species in any of the recognized Tubuliferous groups, and for the present I regard it as standing alone.

CHIROTHRIPOIDES TYPICUS, sp. n. (Pl. 48. figs. 6-8; Pl. 49. figs. 3, 4.)

♀. Length 1·4 mm., breadth of mesothorax 0·175 mm.

Colour light yellowish- or greyish-brown. Ninth abdominal segment

yellowish. Head and antennæ rather darker, with 2nd joint faintly lighter. Fore-femur yellowish, all tibiæ yellow, lightly tinged with grey. Wings light grey-brown, lightest basally.

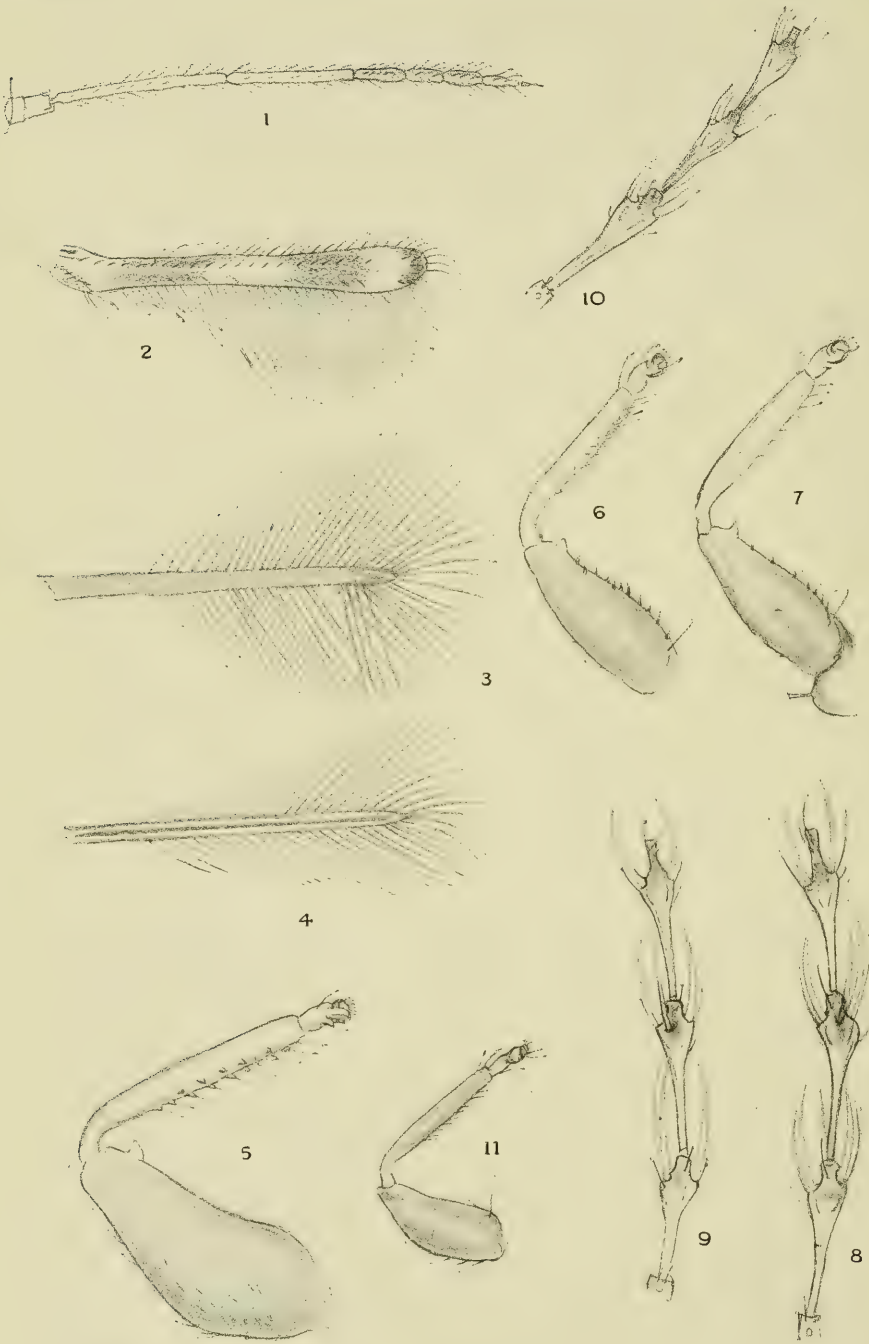
Head very narrow, about 1·6 times as long as broad and only 0·75 the total length of the prothorax; produced beyond eyes. Eyes long, occupying about 0·55 the length of the head, and somewhat close together at their inner margins near middle. Ocelli large, especially the posterior pair, which are widely separated and situated close to the anterior margins of the eyes; fore-ocellus placed near insertion of antennæ. Cheeks practically parallel, short, occupying only 0·27 the length of the head; produced part about 0·7 the width across eyes, the whole of the front being occupied by the insertion of the antennæ. Antennæ almost touching at base, about twice as long as the head; joints 3 and 4 broader than long; relative lengths of joints approximately 10:13:11:10:11:12:12:13, formed as in Pl. 48. fig. 6. Sense-cones on segments 3 to 6, short and rather stout, only 1 on 6. Mouth-cone short and rounded, reaching only about one-third way across prosternum; maxillary palpi short, with one of the sensory filaments at apex longer than the palpus.

Prothorax apparently not strongly chitinous, almost as long as broad, broadest at posterior third, where it is about 2·5 times as broad as the head; narrowed evenly from anterior third to juncture with the head. Only one pair of noticeable bristles at a position indicative of the posterior angles. Prosternum with a long median impression or line. Pterothorax about 1·75 times as long as broad. Posterior coxæ closer together than the other pairs. Fore-femur rather long and broad, intermediate and hind femora and all tibiæ short and stout; fore-tarsus with a stout tooth. Wings reaching to about the 7th abdominal segment, both pairs curiously narrow and parallel-sided; fore-wing about twenty times as long as broad near middle; hind pair with a median vein running well down towards apex. Cilia long, rather widely spaced, with 4 duplicated near apex of posterior margin in the fore-wing.

Abdomen long and linear, about 0·6 the total length of the insect, and five times as long as broad across the 8th segment. Eighth segment produced at each hind angle of the sternite in the form of a long sharp spine, inwardly directed and curved and reaching to the base of the tube; posterior margin of sternite armed with 4 shorter pairs in addition to the lateral teeth, the innermost pair being the longest and stoutest. Posterior margin of 8th tergite simple. Tube short and stout, about 0·8 the length of the head and about 0·6 as broad at base as long; apical hairs not as long as tube, very weak distally.

Type. In the Hope Collections, University Museum, Oxford.

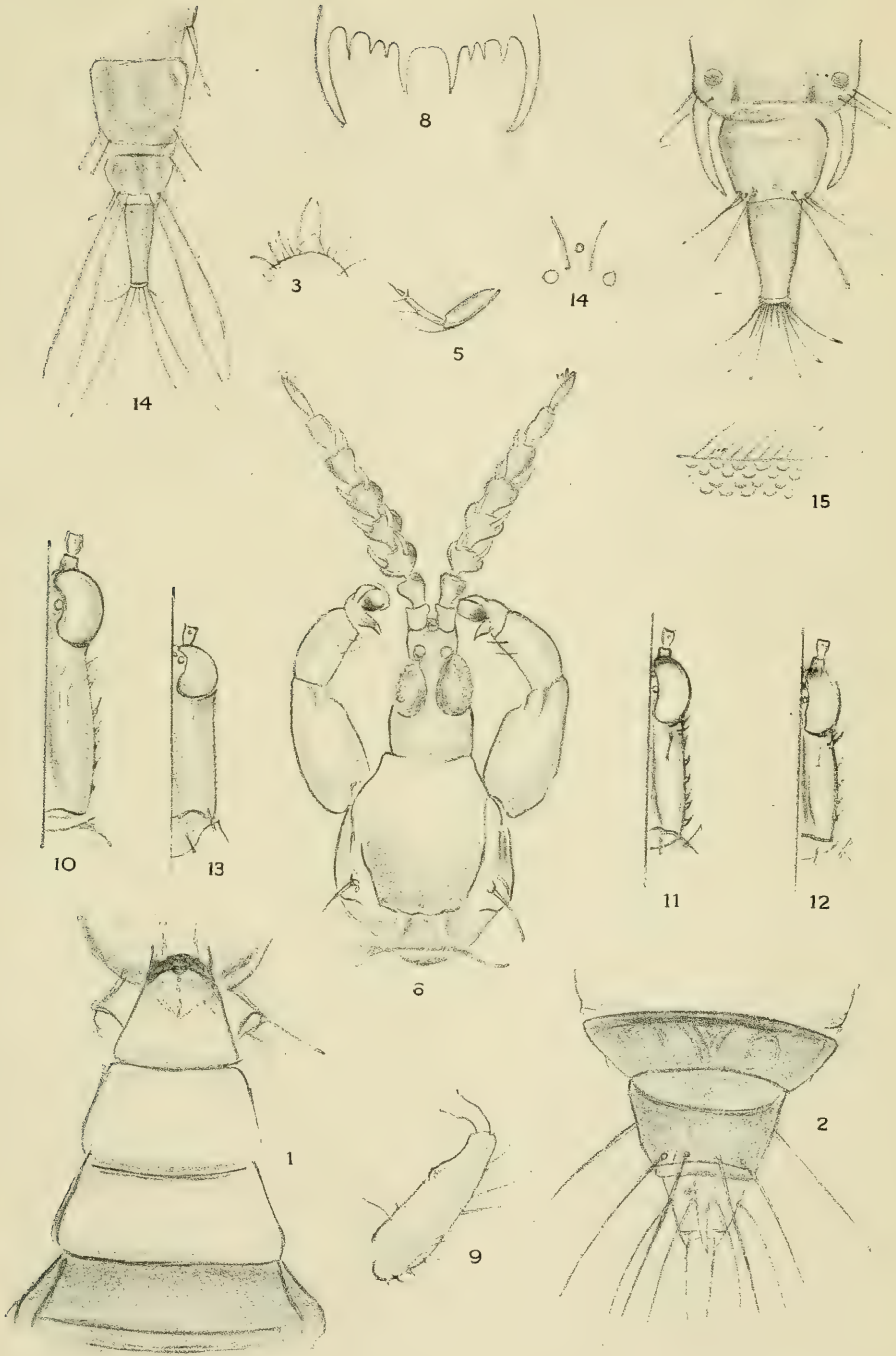
Habitat. TRINIDAD, Arima, Verdant Vale. Taken on a window, to which they were blown by strong wind.



R. S. B. del.

Grout, sc.

TRINIDAD THYSANOPTERA.



R. S. B. del.

Grout, sc.

TRINIDAD THYSANOPTERA.

EXPLANATION OF THE PLATES.

PLATE 48.

- Fig. 1. *Mitothrips petulans*, sp. n., ♀. Abdominal segments 1-4, × 80.
 2. " " " " " " 8-10, × 80.
 3. " " " " Outline of frons, × 80.
 4. " " " " Ocelli, × 80.
 5. " " " " Maxillary palpus, × 120.
 6. *Chirothripoides typicus*, gen. et sp. n., ♀. Prothorax, fore-legs, head, and antennæ, × 60.
 7. " " " " End of abdomen, × 60.
 8. " " " " Posterior margin of the 8th abdominal segment (ventral), × 80.
 9. *Dicaiothrips brevicornis*, Bagnall. Right fore-femur, × 45.
 10. *Eupathithrips dentipes*, Bagnall. Right side of head, × 45.
 11. " *affinis*, sp. n., ♂. " " × 45.
 12. " *silvestrii* (Buffa), ♀. " " × 45.
 13. *Sedulothrips insolens*, sp. n., ♂. " " × 45.
 14. " " " " End of abdomen, × 45.
 15. " " " " Sculpturing of right wing near apex, × c. 120.

PLATE 49.

- Fig. 1. *Mitothrips petulans*, sp. n., ♀. Right antenna, × 80.
 2. " " " " Right fore-wing, × c. 40.
 3. *Chirothripoides typicus*, sp. n., ♀. Right fore-wing, × 40.
 4. " " " " Right lower wing, × 40.
 5. *Eupathithrips dentipes*, Bagnall. Left fore-leg, × 45.
 6. " *affinis*, sp. n., ♂. " " × 45.
 7. " *silvestrii* (Buffa), ♀. " " × 45.
 8. " *affinis*, sp. n., ♂. Joints 3-5 of left antenna, × 80.
 9. " *silvestrii* (Buffa), ♀. " " " " × 80.
 10. *Sedulothrips insolens*, sp. n., ♂. Left fore-leg, × 45.